

CLOSING SPEECH AND CONCLUSIONS

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The subject of the 4th CIEC symposium "Agricultural Waste Management and Environmental Protection" is not only of great academic interest, but also involves highly controversial political issues. CIEC as an international scientific organization is the appropriate forum for discussing these problems. Scientists from many countries had been invited to reveal urgent problems, investigate them thoroughly, and present possible solutions to help politicians in their decisions. The discussed topics deal on one hand with agricultural chemistry, that is how to utilize wastes of agricultural production most efficiently with minimal environmental pollution, and on the other hand, with agricultural techniques how to realize these concepts. The discussions were in some parts very controversial which is in the nature of things and shows the difficulty and diversity of these problems and their effects.

I. The agrochemical bases are nutrient and pollutant balance sheets (i.e. input-output calculations) not only for agricultural soils but also for the environment in the broadest sense. A far-reaching agricultural utilization of wastes is a reasonable concept; it means in the end a re-supplying mineral nutrients to the natural cycle. Environmental agencies generally demand that more wastes than can be actually utilized by plants with respect to conserving or improving soil fertility or such amounts of harmful chemicals exceeding the soil's buffering capacity are not to be applied. However, the bounds of these demands by environmental and water protection agencies have to be realized as well. It has to be questioned for example if it is really necessary to require drinking water quality for the whole water reservoir even though only 2-3% is used as drinking water.

1. Wastes of plant production cause, with a few exceptions, only minor problems; in other words, using them is reasonable nutrient management: to cope with a high C supply is possible, whereas their N content is relatively low which may only lead to a temporary biological "blocking" of N at C/N ratios over 30.
2. A different situation occurs with the application of great amounts of wastes from processing plant products, e.g. wastewater from potato starch production. In this case the applied amounts and thus the nutrient supply have to be restricted. This is true especially for nitrogen on the background of nitrate pollution of groundwater, whereas potassium and phosphate are less relevant to the environment since they are hardly leached in soils.
3. More difficult is the situation with respect to wastes of animal production.
 - a) A usual application of solid manure generally gives less problems than the application of slurry, as long as the livestock intensity is low (ca. 100 dt solid